DOCUMENT RESUME

ED 200 774 CE 028 560

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TITLE Cooperative Industrial Education: The Fitchburg Plan.
PUB DATE Apr 81
NOTE 26p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA, April 13-17, 1981).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Apprenticeships; *Cooperative Education; *Educational History; Educational Research; *Employment Level; Employment Patterns; Graduates; *Graduate Surveys; *Industrial Education; Parent Background; Program Descriptions; Secondary Education; *Vocational Followup
IDENTIFIERS *Massachusetts (Fitchburg)

ABSTRACT

In response to expanding American industry in the late 1800s, manual training and industrial education were proposed to prepare properly trained workers. Industrial education was advocated as education for specific trades, and cooperative education was one of its most innovative forms. The first high school cooperative industrial course in the United States was established during summer, 1908, in Fitchburg, Massachusetts. Open to high school boys and other young men, the four-year course included one year spent in the high school building and the next three spent alternating weekly between shop and school. Curriculum materials used in the academic subjects required were directly related to shop work. Boys also received compensation for their shop work. Upon completion of the required hours of work, the student was documented as a beginning journeyman. The program was discontinued in 1928. Intergenerational occupational data were obtained on 251 participants, and 71 graduates were interviewed. It was found that 53% of the sons of blue-collar workers ended up in white collar occupations; 74% moved to an occupational category higher than the father. Significantly, 31% of graduates ended up in "high white-collar occupations," and 25% of them entered professional occupations. (YLB)

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COOPERATIVE INDUSTRIAL EDUCATION:

THE FITCHBURG PLAN

Paper Presentation Before the American Educational
Research Association
Annual Meeting, Los Angeles, California
April 13-17, 1981

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CE028560

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COOPERATIVE INDUSTRIAL EDUCATION: THE FITCHBURG PLAN

Between 1870 and 1920 America became the world's leading industrial power, and her citizens were "virtually transformed from a rural into a predominantly urban people."[1] American society experienced dynamic changes in both population and industrial growth. The century after 1830 witnessed the most dramatic demographic migration the world had ever seen. The number of immigrants landing on America's shores totatled almost 37,000,000; the nation's institutions attempted to meet the unimagined demands necessitated by their arrival, and the very fabric of American culture changed, reflecting the heterogenous quality of the new population.

In the 1870s the United States was basically an agrarian country, with less than one-fifth of the people living in cities. By 1910 the urban proportion had increased to two-fifths, as the nation's population grew from 39,000,000 to 92,000,000.[2] As wave upon wave of immigrants arrived on America's shores, they tended to settle in the already heavily populated urban centers.

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[1]Merle Curti, The Social Ideas of American Educators (n.p.: Charles Scribner's Sons, 1936; reprint ed., Totowa, N.J.: Littlefield, Adams & Co., 1974), p. 204.

[2]Henry Perkinson, The Imperfect Panacea: American Faith in Education, 1865-1965 (New York: Random House, 1968), p. 62.

"By 1900 immigrants constituted 40% of the population of the twelve largest cities in the country, [with] another 20% . . . second generation."[3]

As American industry expanded, so did the demand for labor. Cities already crowded attempted to absorb the newest arrivals. Conditions in the urban centers deteriorated, the plight of the immigrants worsened, and for many, the promise of the American dream faded. In the face of this dismal situation, Perkinson argued that "Americans [did as they had always done] looked to the schools to solve their social, economic, and political problems."[4]

Between 1875 and 1900 manual training and industrial education were proposed as the "educational panaceas" that would meet the requirements of a new and differentiated curriculum. Herschback, looking at the last quarter of the nineteenth century, wrote

> By the 1880's the industrial-urban forces of change sweeping across America had created a social environment receptive to industrial education.[5]

Education itself was undergoing a fundamental change because of attempts to make the course of study more practical. According to Cohen, "few movements in the history of American education

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[3]Samuel P. Hays, The Response to Industrialism: 1885-1914 (Chicago: University of Chicago Press, 1957), p. 95.

[4]Perkinson, The Imperfect Panacea, p. 12.

[5]Dennis Herschback, "Industrial Education Ideology, 1876-19117: A Social Historical Analysis" (Ph.D. dissertation, University of Illinois at Urbana-Champaign, 1973), p. 16.

have taken so sudden and powerful hold on the minds of American school reformers";[6] and yet,

> No subject elicited more controversy in the first decades of the twentieth century than vocational [industrial] training. Both its critics and advocates correctly understood that integrating programs directly applicable to the job market would transform public education.[7]

"Vocational/Industrial Education" was an important and integral part of American education. To see it in the context in which it occurred is to understand not only the impact it made on its time but the influence it had on the present, and perhaps, the future as well. Vocational/Industrial Education was closely tied to the vast changes and pressures, ideas and ideologies, that were present in American society. As a curricular innovation, industrial education was widely accepted because of changes that were taking place in American industry.

The decades preceding the First World War witnessed the emergence of modern American industry. The roots of the new factory system can be discerned in the years after 1880 when, according to Nelson,

> the size and sophistication of factory operations gradually transformed the relationships between manufacturers, the shop managers, and the workers.[8]

At the end of the nineteenth century, with the ranks of the industrial work force swelled by the infusion of foreign labor, American industry continued to be plagued with the problem of

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[6]Sol Cohen, "The Industrial Education Movement," American Quarterly 20 (Spring 1968):96.

[7]Marvin Lazerson, Origins of the Urban School: Public Education in Massachusetts, 1870-1915 (Cambridge: Harvard University Press, 1971), p. 265.

[8]Daniel Nelson, Managers and Workers: Origins of the New Factory System in the United States, 1880-1920 (Madison: University of Wisconsin Press, 1975), p. 163.

obtaining properly trained workers. The problem, although complex, stemmed principally from the changed nature of industrial technology, and the inability of the traditional apprenticeship system to meet the needs of modern production.

According to Carroll D. Wright, who at the time was the President of Clark College, in Worcester, Massachusetts,

> The industrial revolution which took place in the latter part of the 19th century, resulting in the production of labor-saving machinery, was the beginning of the decline of the apprenticeship system.[9]

By 1910 the National Education Association declared

> The decline of the apprenticeship system incident to the subdivision of manufacturing processes has made it impossible for mechanics to secure broad and generous training.[10]

However, in certain areas, such as the manufacture of machine tools and steam engines, "manufacturers continued to accept apprentices but found that the traditional approach no longer sufficed."[11]

In an attempt to meet their needs for skilled labor, many large manufacturers modified their existing apprenticship programs

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[9]Carroll D. Wright, "The Apprenticeship System as a Means of Promoting Industrial Efficiency," in Proceedings, Bulletin No. 5, by NSPIE (Asbury Park, N.J.: Kinmonth Press, 1907), p. 30.

[10]NEA, Report of the Committee on the Place of Industries in Public Education (n.p.: NEA, 1910), p. 109.

[11]Nelson, Managers and Workers, p. 96; in a poll of 116 machinery manufacturers in 1896 the editors of the American Machinist 19 (December 1896): 1204, found that 85, or 73 percent, were still accepting apprentices.

in order "to provide a steady supply of thoroughly trained employees, many of whom, it was understood would ultimately assume managerial positions."[12] The smaller companies, unable to develop large-scale apprenticeship programs, "joined reformers and educators in promoting governement-subsidized industrial education."[13]

In Massachusetts there was a recognition that

> . . . a new educational need has arisen, because of our changed social and industrial conditions. This need can only be met by the establishment of schools that will give our youth the intelligent insight into the vocations which they choose and the incipient skill to be efficient in them.[14]

As American industry entered a new phase of development, there was a concomitant disillusionment with Manual Training and its ability to train the kind of worker needed by modern industry. In distinguishing between Manual Training and Industrial Education, the Massachusetts Commission on Industrial Education attempted to familiarize the public with the shortcomings of Manual Training.

> . . . Manual training is not industrial training, and should not be confused with it. Manual training gives, if well done, a general acquaintance with our constructive and productive activities. It may make a pupil generally "handy" and hence may serve as preparation for industrial training. But it goes no further. Industrial training, on the other hand, means vocational training--training in trades or agriculture. It aims to develop industrial intelligence and skill in particular vocations.[15] (Italics mine.)

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[12]Nelson, Managers and Workers, p. 97.

[13]Ibid.

[14]Commonwealth of Massachusetts, Massachusetts Commission on Industrial Education, Bulletin, No. 8 (Boston: Wright & Potter Prrinting Co., 1908), p. 11.

[15]Ibid., p. 12.

During the first decade of the twentieth century, many manufacturers and industrialists turned their attention to industrial education. Unlike its precursor, manual training, industrial education would be "education for specific trades." It was a workable curricular reform because "back of many groups of trades or factory processes [were] found certain elements of likeness."[16] Certainly there was a great need for trained industrial workers.[17] Although industrial education took many forms, cooperative education was one of the most innovative.[18] The first high school cooperative industrial course in the United States was established during the summer of 1908 in the City of Fitchburg, Massachusetts.

Fitchburg, situated on a branch of the Nashua River, is located in north-central Massachusetts about fifty miles northwest of Boston. Incorporated as a city in 1872, Fitchburg enjoyed a national and international reputation for the manufacture of paper and pulp, cotton goods, woolen and worsted goods, and foundary and machine shop products.[19]

In the early spring of 1908, while attending a meeting in New York City of the National Association of Manufacturers,

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[16]National Educational Association, Report of the Committee on the Place of Industries in Public Education (n.p.: NEA, 1910), p. 64.

[17]Ibid., pp. 65-68.

[18]U.S. Congress, Senate, Report of Committee on Industrial Education of the American Federation of Labor, Industrial Education, S. Doc. 936, 62d Cong., 2d sess., 1912, pp. 50-59.

[19]Technical Advisory Corporation, Fitchburg Industrial Survey (New York: Technical Advisory Corporation, 1925), pp. 42-52.

Mr. Daniel Simonds, a manufacturer from Fitchburg, heard Professor Herman Schneider, Dean of the College of Engineering at the University of Cincinnati, speak on the subject of "co-operative industrial education."[20] Mr. Simonds was impressed with the cooperative system as outlined by Professor Schneider and was convinced of the feasibility of adapting it to the local industries in Fitchburg.

When he returned to Fitchburg, he presented his ideas to the school department. A visiting committee was sent to Cincinnati to observe the co-operative industrial program in action. Needless to say, they were duly impressed with the program and recommended that it be adopted in Fitchburg.[21]

After passage by the city council, the school department, and a committee of interested manufacturers it was agreed to establish and adopt a "co-operative industrial course" at Fitchburg High School.[22] Mr. William B. Hunter was chosen as the director because he possessed not only a technical education but had many years experience in shop work.[23] On August 3, 1908, Fitchburgers read,

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[20]Rev. Edward B. Saunders, "Daniel Simonds Memorial," in Proceedings of the Fitchburg Historical Society, 5 vols. (Fitchburg: Fitchburg Historical Society, 1895-1914), 5:160.

[21]McCann, Matthew R. "The Fitchburg Plan of Co-Operative Industrial Education," in Bulletin No. 50, by U.S. Bureau of Education (Washington, D.C.: Government Printing Office, 1913), p. 17.

[22]Ibid. For a full account of co-operative industrial education at the University of Cincinnati see Clyde William Park, "The Co-operative System of Education: An Account of Cooperative Education as Developed in the College of Engineering University of Cincinnati," in Bulletin No. 37, by Department of the Interior, U.S. Bureau of Education (Washington, D.C.: Government Printing Office, 1916) and Herman Schneider, "Co-operative Plan of the University of Cincinnati," in Bulletin No. 15, by National Society for the Promotion of Industrial Education (New York: NSPIE, 1912).

[23]McCann, "The Fitchburg Plan," p. 17.

> As the result of a conference held at the Johnsonia last night, it is expected that the boys of the second, third, and fourth years of the high school, who plan to take the new practical and theoretical industrial course at that institution will commence work in the local factories where they are to get their practical work next week.[24]

The program was open to high school boys, as well as any other young man who might wish to take advantate of this kind of course.[25] After several years of interest, Fitchburg finally decided on a (practical) course of study that would meet the needs of a particular segment of its youth. During the first year, seven companies agreed to work with the school authorities in setting up a co-operative industrial course;[26] by 1913, the number had doubled.[27]

The Co-Operative Industrial Course offered at Fitchburg High School was of four years' duration and could be elected by any boy who was eligible to enter the city's high school. The first year was spent completely in the high school building. The next three years were spent alternating weekly between shop and school.[28] The manufacturers took the boys in pairs so that by

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[24]Fitchburg Daily News, 3 August 1908.

[25]"Prof. Hunter Will Meet Pupils," Fitchburg Sentinel, 5 August 1908.

[26]Fitchburg School Committee, Report of the School Committee, 1909 (Fitchburg: H. M. Downs Printing Co., 1910), p. 38.

[27]McCann, "The Fitchburg Plan," p. 9; see also, Fitchburg Daily News, 29 September 1908.

[28]After 1920, Fitchburg began to experience a local recession. Many machine shops closed down, and students were laid off quite often. In 1925, the work component of the Course was cut back to two years. See Lillian Kent, "Fitchburg and Leominster, Massachusetts: A Comparative Study of Two Small New Englsand Cities," (M.A. thesis, Clark University, 1964), p. 62, for a discussion of the effects the recession had on Fitchburg's economy.

alternating one boy would be in the shop at all times. On Saturday morning, the boy who had been in school reported to his job in order to familiarize himself with his alternate's work and prepare for the following Monday. This procedure was intended to facilitate the changeover of apprentices each week.[29]

Before either student or manufacturer committed himself, a two month trial period was established. Following the completion of the Freshman year, Mr. Hunter, the Course's director, presented the prospective apprentices with a list of available openings at the various cooperating shops. From this list, the students selected the shop and trade they wanted. If a particular trade was not available, the student would have to take a different position and hope that a transfer could be arranged at a later time. On the other hand, it was possible for a student to secure his own position; even if the job was not with one of the "official" cooperating businesses, if Mr. Hunter gave his approval, the student was permitted to serve his apprenticeship there.[30] If

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[29]Although this procedure was officially described in the Course of Study (see, for example, Fitchburg, School Committee Report, 1908, pp. 46-47), in actuality, depending on the trade or particular shop, students did not have to work on Saturday. For that matter, in periods of economic recession, many students were not assigned alternates--because there were not enough positions in the shop; Professor Schneider pointed out that the "alternate-week arrangement" which many people felt was a basic idea of the cooperative plan was merely a detail and was employed because it happened to fit local conditions. He said that "even at the University of Cincinnati, we are devising different systems of co-operation." Schneider, "Co-operative Plan," pp. 59-60.

[30]This was especially true during economic recessions. After 1922, when jobs were very scarce, almost any work was accepted. When no placement was possible at all, students remained in school full-time. Interview with Mr. Francis Sullivan (Class of 1923), Deputy Chief, Fitchburg Fire Department, ret., 7 July 1979.

the boy did not like his shop experience, he cold request a different trade assignment; or, if he realized that the Course was not for him, he could request a transfer to any other Course offered at the high school. This option was well known and could be exercised without prejudice.

If, after completing the two month summer trial period, "the special student-apprentice" decided to remain at his chosen shop and trade, and if the cooperating manufacturer was satisfied with the young man's aptitude and ability "to follow the trade," a written agreement was entered into between the boy, his parents, and the manufacturer.[31]

During the week the student was at the high school building, he was required to take a full complement of academic subjects. Table 1 outlines the Industrial Course's academic requirements for 1913. English, Mathematics, Science, and Drawing were required each year; courses such as Mechanics (simple machines), Mechanisms of Machines, Electricity and Heat, and Shop Mathematics indicate that the curriculm was developed in such a way as to correlate the school work with shop work.[32]

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[31]For a detailed discussion of the evolution of the Industrial Ccurse and the various kinds of contracts used, see Paul Joseph Ringel, "The Introduction and Development of Manual Training and Industrial Education in the Public Schools of Fitchburg, Massachusetts, 1893-1928" (Ed.D. dissertation, Teachers College, Columbia University, New York, 1980), pp. 153-161 & 210-217.

[32]By 1913 the Industrial Course had expanded to include preparation for: Machinist, Draftsman, Pattern Maker, and Iron Molder; Printing; Office Work Leading to Salesmanship; and Cotton Manufacturing. The academic requirements were changed to reflect the different competencies necessitated by the expanded courses. For an outline of the Courses see Ringel, "Manual Training and Industrial Education," pp. 173-176 (Tables 9-12).

TABLE 1

MACHINIST, DRAFTSMAN, PATTERN MAKER, AND IRON MOLDER COURSE: 1913

First Year: All School Work	
English	4[a]
Arithmetic, tables and simple shop problems	5
Civics and American History	4
Algebra	5
Freehand and Mechanical Drawing and Bench Work	10
Second Year: School and Shop Work	
English	5
Shop Mathematics, Algebra and Geometry	5
Physics	4
Industrial History and Commercial Geography	5
Mechanism of Machines	5
Freehand and Mechanical Drawing	5
Third Year: School and Shop Work	
English	5
Shop Mathematics, Trigonometry	5
Physics	4
Mechanism of Machines (one-half year)	4
Chemistry	4
Business Methods (one-half year)	4
First Aid to Injured	1
Freehand and Mechanical Drawing	6
Fourth Year: School and Shop Work	
English	5
Shop Mathematics	5
Economics (one-half year)	5
Mechanism of Machines and Jig Design (one-half year)	5
Physics, Electricity and Heat	4
Chemistry	6
Freehand and Mechanical Drawing	4

SOURCE: Fitchburg, The Fitchburg Plan of Cooperative Industrial Education (Fitchburg: Industrial Department, Fitchburg High School, 1913), p. 4.

[a]Numerals refer to the number of periods per week of 45 minutes duration

Although the students in the Industrial Course were required to take a full load of academic subjects, many of the subjects "changed in form and structure . . . . Subjects were selected as would fit the students to be intelligent mechanics and thoughtful artisans."[33] Textbooks and curriculum aids were carefully chosen with an eye to the practical.[34] Because of the unique nature of the Course, it was felt that the boys' shop experiences would be greatly enhanced if the curriculum materials they were using in school could be directly related to their (actual) shop work. This was an important innovation because it made the school work more relevant.

Another unique feature of the Course was the "compensation" the boys received for their shop work. Many of the young men came from large and often times poor families and the money they received was desperately needed. For others, the money earned while on the job was the means by which they financed their high school education rather than entering the job market immediately after completing their grammar school studies.[35] When the Course began, the boys received 10 cents an hour the first year, 11 cents an hour the second and 12½ cents an hour the third. In other words, a student-apprentice could earn $552.75 over the course of three years.[36] These rates were actually higher than those received by

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[33]McCann, "The Fitchburg Plan," p. 13.

[34]Ibid., pp. 13-18.

[35]For an account of one poor student's story of success, see Ringel, "Manual Training and Industrial Education," pp. 209-210.

[36]Ibid., pp. 157-158.

"regular" apprentices who were already working in the field.[37]

Under the terms of the Apprentice Agreement, the document signed by the student-apprentice, his parents, and the cooperating company, the Industrial Course student was expected to work approximately 4,950 hours during the three years of his shop work, or about 1,650 hours per year.[38] Although the apprentices' wages increased over the years to reflect the changes in the prevailing pay scales, the number of hours required to fulfill the contract remained the same. Furthermore, upon the completion of the requisite 4,950 hours, the apprentice's contract was signed by an officer of the cooperating company where it was duly noted that the said apprentice had completed his term of apprenticeship.[39] This document was proof positive of the student having fulfilled his obligations under the terms of the agreement and was accepted at face value as a testament to his ability, and allowed him to command the wages of a beginning journeyman.[40]

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[37]Ringel, "Manual Training and Industrial Education," p. 157. At first these rates of pay may appear low but, in fact, as Edward A. Krug noted, "they were not [low] in relation to children's wages at the time." The Shaping of the American High School, 1880-1920 (New York: Harper & Row, 1964; University of Wisconsin Press, 1969).

[38]Ringel, "Manual Training and Industrial Education," Appendix A.

[39]Ibid. After 1925, the work component of the Course was cut back to two years but the required hours of apprenticeship, which were set essentially by the trade, remained the same. Thus, after 1925, if a student-apprentice wanted to obtain his "apprenticeship papers" he would have to "make up" the additional hours. This was usually accomplished the year following graduation.

[40]Interview with Mr. Edward Lundberg, Fitchburg, 20 July 1979. Mr. Lundberg was a graduate of the class of 1914. He is a retired foreman from Simonds Saw & Steel Company. The author is grateful to Mr. Lundberg for allowing him to visit in his home and for the valuable information he provided.

Between 1911 and 1928 263 students graduated from the Co-Operative Industrial Course at Fitchburg High School. They represented fifteen different ethnic groups and Table 2 illustrates the percentage of representation for each. The Irish, Finns, Yankees, and English accounted for almost 68 percent of the total number of graduates. The Germans, Scandinavians, and French Canadians made up about 22 percent, with the other eight groups representing the remainder.

TABLE 2

ETHNIC PRESENTATION OF INDUSTRIAL COURSE STUDENTS AT FITCHBURG HIGH SCHOOL 1911-1928

Ethnic Group	Percentage	Etnic Group	Percentage
Irish	18.25	Swedish	1.52
Finnish	18.25	Italian	1.52
Yankee[a]	16.73	Jewish	1.52
English	14.83	Assyrian	0.76
German	8.36	Norwegian	0.72
Scandinavian[b]	6.84	Syrian	0.38
French Canadian	6.84	Armenian	0.38
Scotch	3.04		

SOURCE: Miss Eleanora West, Curator, Fitchburg Historical Society.

[a]"Yankee" refers to those families that have deep historical roots in Fitchburg.

[b]"Scandinavian" is used because it was not possible to determine whether the student's family came from Sweden, Norway, or Denmark.

Beginning in the early 1920s, Fitchburg began to experience a local recession; by the end of the decade, all city agencies were required to make substantial cuts in their operating budgets. The school department was forced to cut back on many of its programs. In 1928 ten students were graduated from the Industrial Course. They were the last to participate in the program; it was officially discontinued with their graduation,[41] and the remaining students were absorbed by the other courses.

Almost three-quarters of a century has past since the Co-Operative Industrial Course was formed. Since that time, its members have spread out across the nation, entering a variety of occupations. Of the 263 students who took part in the Co-Operative Course, it was possible to obtain intragenerational occupational data on 251 (95.4%). Furthermore, seventy-one of the seventy-three living graduates were interviewed--three of whom graduated in the class of 1913 and five in the class of 1914. In order to identify who the members of the Co-Operative Course were, it was necessary to consult the "graduation programs" of Fitchburg High School from 1911 to 1928.[42] Once this had been done, each student was located in the "Book of Admissions."[43] This was an important source because it corroborated the graduation data, and more importantly, listed the occupation of each student's father at the time of high school registration. It was necessary to work backwards from the graduation programs to the "Book of Admissions" because the records at

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[41]Fitchburg, Report of the School Committee, 1928, pp. 8-9.

[42]Graduation Programs of Fitchburg High School, 1900-1930," Alumni Association, Fitchburg High School.

[43]Fitchburg. Fitchburg High School. "Book of Admissions, 1908-1928." (Handwritten.)

the high school (and the Fitchburg School Department) did not indicate which Course the students chose, only that they completed the required number of credits and received their diplomas.

At the time of high school registration, each boy's father or guardian indicated his current occupation. Using the Fitchburg City Directories,[44] information obtained during interviews with graduates or their relatives, and obituary material published in the Fitchburg Sentinel, it was possible to obtain intragenerational information on slightly more than 95 percent of the students. (Intragenerational data were not collected for the fathers.) Using Thernstrom's five major categories of occupational rank,[45] the occupations of both groups were identified and compared.[46] It was found that 133 of the 250 students whose fathers' occupations were classified as blue collar ended up in occupations that were considered white collar.[47] In other words, 53 percent of the sons of blue-collar workers ended up in white-collar occupations. Fifty, or 20 percent, remained at the same occupational level as the father. However, when one looks at occupational movement for all students regardless of whether they moved from the blue-collar category to the white, it was found that 184 of the students,

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[44] Fitchburg City Directories (New Haven, Conn.: Price & Lee Co., 1908-1979).

[45] Stephen Thernstrom, The Other Bostonians: Poverty and Progress in the American Metropolis, 1880-1970 (Cambridge: Harvard University Press, 1973), pp. 290-292.

[46] For a detailed comparison of fathers' and sons' occupations, see Ringel, "Manual Training and Industrial Education," pp. 286-311.

[47] Although occupational data were found on 251 of the graduates, it was only possible to find intergenerational comparative data on 250.

or 74 percent, moved to an occupational category higher than the father. Thus when one considers the number of students who remained at the same level as their fathers and the number who moved up in rank, one obtains a "slippage" (those who ended up in occupations lower than their fathers), or downward mobility of only 6 percent.

These data thus indicate that a substantial number of men, whose fathers were classified as "blue collar" when they registered their sons at Fitchburg High School, ended up in "white-collar" occupations. Thernstrom wrote, "the rise from an unskilled laboring position to virtually any non-manual occupation represents significant upward mobility,"[48] and this definition of "mobility" can be applied here. Certainly the fact that more than half of the students who took part in the Co-Operative Industrial Course moved into white-collar occupations indicates that this group was definitely upwardly mobile.

The graduates of the Industrial Course went into many different fields and specialties, but it is possible to group them occupationally in a hierarchical order. Table 3 illustrates the occupational distribution of Industrial Course graduates. Five major occupational strata are arranged hierarchically; by further subdividing these, one can see the various occupations the graduates entered.[49]

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[48]Stephen Thernstrom, Poverty and Progress: Social Mobility in a Nineteenth Century City (Cambridge: Harvard University Press, 1964), p. 217.

[49]The categories are essentially the ones used by Thernstrom, The Other Bostonians, pp. 290-292.

TABLE 3

THE OCCUPATIONS OF THE GRADUATES OF FITCHBURG HIGH SCHOOL'S CO-OPERATIVE INDUSTRIAL COURSE

I.	High White Collar Professional	Chemist	1
		Clergyman	5
		Dentist	1
		Engineer	29
		Teacher	28
		Social Worker	1
	Major Proprietors, Managers, and Officials	Corporation Offical	6
		Government Official	3
		Manufacturer	4
Total number of men represented in category			78
II.	Low White Collar Clerks and Salesmen	Accountant	1
		Agent	2
		Bank Teller	2
		Clerk	5
		Office Worker	3
		Postal Worker	5
		Salesman	11
	Semiprofessionals	Athlete	1
		Draftsman	21
		Osteopath	1
	Petty Proprietors, Managers, and Officials	Superintendent	4
		Assistant Superintendent	1
		Proprietor or manager of a small business	23
		Foreman	6
		Minor government official	2
		Lieutenant United States Navy	1
		Fitchburg Fire Department	1
Total number of men represented in category			90

TABLE 3--continued

III.	Blue-Collar Occupations		
	Skilled	Boilermaker	1
		Compositor/Printer	4
		Electrician	4
		Engineer (stationary)	3
		Goldsmith/Engraver	1
		Machinist	38
		Molder	1
		Patternmaker	3
		Pumpmaker	1
		Sawsmith Inspector	5
		Sheetmetal worker	1
		Silversmith	1
		Tool and die maker	3
Total number of men represented in category			69
IV.	Semiskilled and Service Workers	Cook	1
		Factory operative	10
		Psychiatric Aide, V.A.	1
		Soldier	1
		Teamster	1
Total number of men represented in category			14
V.	Unskilled laborers and Menial Service Workers		
Total number of men represented in category			0

SOURCE: Fitchburg City Directories, 1908-1979; obituary listings from the Fitchburg Sentinel; interviews with graduates and family members of students who took part in the program.

NOTE: Numerals represent the number of Industrial Course graduates in each occupational area.

One of the most significant findings of this study, as illustrated in Table 3, is the fact that 78, or 31.07 percent of the graduates of the Industrial Course ended up in "High White-Collar" occupations. Of this number, 65, or 25.89 percent, entered "Professional" occupations!

Ninety of the graduates, or 35.86 percent, went into occupations that were classified as "Low White-Collar." Although significant in itself, when one combines the number of students in the Low and High White-Collar category he sees that 168, or 66.93 percent of the graduates of Fitchburg's Industrial Course entered "non-manual occupations"!

As one might expect based on the kind of instruction given to the Industrial Course students, it is not surprising that 69, or 27.49 percent of the graduates entered "skilled blue-collar occupations." Although not classifed as "non-manual," the large number of students who entered the "skilled trades" is another indicator of the high caliber of student attracted to the Industrial Course and the quality of instruction received in high school. Although not actually crossing the "White-Blue-Collar" line, the fact that more than a quarter of the Course's students entered "skilled occupations" demonstrates that these men, many from humble backgrounds, were indeed upwardly mobile.

Only 14, or 5.58 percent, of the graduates of the Course entered "Semiskilled or Service" type work. With no graduates in the "Unskilled Laborer" category, this means that of the 251 occupations the author was able to identify for the graduates 237, or 94.42 percent, found themselves in occupations at the "Skilled Blue-Collar" level or higher. Virtually <u>every</u> student who graduated from Fitchburg High School's Co-Operative Industrial Course was occupationally successful.

Because it is so remarkable that almost 26 percent of the Industrial Course graduates became "Professionals," it is

important to look at this category in more detail. The number of young men who went into teaching (28) and Engineering (29) was almost the same. However, the general categorizations mask the full significance of this fact. Table 4 illustrates these two professions in detail.

TABLE 4

DIFFERENT TYPES OF WORK PERFORMED BY INDUSTRIAL COURSE GRADUATES WHO ENTERED TEACHING AND ENGINEERING

Teachers		
1.	Industrial Arts or Unclassified	18
2.	College Professor	1
3.	Director of Guidance	1
4.	Director of Manual Training School	1
5.	Director of Physical Training	2
6.	Director of Vocational School	1
7.	Teacher of Mechanical Engineering	1
8.	Instructor, Ford Motor Company	1
9.	Superintendent of Schools	1
10.	Chairman, Machine Trades	1
Engineers		
1.	Unclassified	5
2.	Architectural	1
3.	Automotive	1
4.	Engineering Consultant	2
5.	Electrical	3
6.	Mechanical	11
7.	Piping	1
8.	Purchasing and Estimating	1
9.	Production	2
10.	Research	1
11.	Sales	1

SOURCE: Fitchburg City Directories, 1908-1979; obituary listings from the Fitchburg Sentinel; interviews with graduates and family members of students who took part in the program.

Many of the graduates of the Industrial Course entered normal schools in order to obtain teaching credentials. The

Fitchburg Normal School, which many of them attended, had the first Practical Arts Course in the United States that prepared teachers of Industrial Arts. Some students entered four year colleges where they received their undergraduate degrees; several continued their studies to the Master's level. All of the teachers interviewed during the course of the author's research indicated that the Industrial Course was academically rigorous and and the course work was substantial.[50] Each stated that the industrial component combined with the work in mechanical drawing was extremely helpful to him in his own teaching career.

Table 4 also illustrates the different kinds of engineers Industrial Course graduates became. Many of the men who became engineers worked in the engineering departments of the cooperating shops. Since many of these men were "mechanically inclined," it is not surprising that a large number went into mechanical engineering. However, no matter which branch of engineering they entered, the graduates of the Industrial Course felt that they were well prepared by their high school studies to enter schools of engineering.[51]

Many of the men took their engineering degrees at the University of Cincinnati or Northeastern University because they both had cooperative programs. Of course, as the graduates spread across the country, they often attended universities where they resided.

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[50]Interview with Mr. Edwin Nelson, Fitchburg, 18 July 1979. Mr. Nelson, a member of the Class of 1917, was the Superintendent of Schools of Brockton, Massachusetts for thirty years. He is now retired; interview with Professor Alfred Hobbs, Fitchburg, 1 August 1979 and member of the Class of 1920, and is Professor Emeritus, Fitchburg State College. 24

[51]Much of the practical training they received in the use of tools and the construction of models was useful later as engineers.

The advocates and supporters of Fitchburg's experiment in industrial education intended to establish a Course that would prepare young men to be skilled craftsmen in the city's various local industries. Not only was this expectation met but the fact that almost 67 percent of the Course's graduates ended up in "White-collar" occupations demonstrates a "success" rate beyond anything the early proponents could have hoped for.

Although the young men who elected the program came from different ethnic and religious backgrounds, for the most part their parents were interested in their learning a trade. If high school could be completed at the same time, all the better. In most cases, the students of the Industrial Course chose it themselves with very little input from others. Theirs was a premeditated, conscious choice, and the election of the program was never made by Fitchburg school personnel.

After graduation from high school, many of the students attended institutions of higher education, while others took positions in the skilled trades as machinists, pattern-makers, sawsmiths, etc. Because of their participation in the Co-Operative Industrial Course and the quality of the academic and practical preparation they received, most of the graduates found ready employment in Fitchburg's industries. Although many of the young men who took part in the program remained in Fitchburg, a surprising number moved away.

Many students left Fitchburg when they joined the armed services. Discharged in different places, they settled down and never returned home. Others left to attend colleges and technical institutes; the majority, however, left because of the limited opportunities in Fitchburg--especially after 1929.

In 1928 the Co-Operative Industrial Course of Fitchburg High School was discontinued. For the most part, its graduates ended up in white-collar or skilled occupations. The data of this study incontrovertably demonstrate that they were in no way trapped in low level occupations. It can thus be said that those students who took part in the nation's first cooperative industrial education program were, as a group, upwardly mobile and vocationally and economically successful.